

Rock-Carved Water Cisterns, Batuan, Bohol, Philippines

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THE GROWTH OF the Philippine trade in antiquities and of private archaeologic collections have limited the number of new archaeologically significant sites with in situ artifacts. Clandestine grave robbers continue to probe into more remote areas to meet the buoyant demand. In Bohol Province, located in the Central Visayan island group of the Philippines, new archaeological sites rich in native wares are rare (Fig. 1). However, there is a type of archaeologic artifact remaining in Bohol's moist interior upland (avg. 2000 mm/year) that may be of some significance in discerning local prehistory.

From 1957 to the present *Asian Perspectives* has published only two articles pertaining to rock carving in Southeast Asia. Rock-carved artifacts form a relatively permanent and seemingly important aspect of culture. The interior upland of Bohol has several examples of rock carving whose permanence is in question (Pl. 1a). In this case the threat is not looting, as yet, but government development projects. Here I describe three rock-carved cisterns found during a study of agricultural systems in the municipality of Batuan in the rugged interior of Bohol Province.

In studying the interior karst landscape of Bohol and its lowland rice economy, analysis of water resources including springs was mandatory. Agricultural water sources were the primary concern; however, a more general understanding of the density of springs was required. Therefore all springs, agricultural and domestic, were mapped within the study areas. An impressive total of 14 utilized springs per square kilometer was found in one study area (Fig. 2). Of the 32 springs mapped, 38 percent are domestic springs that remain undisturbed by government programs. Government-upgraded springs represent 28 percent of the sample. The remaining 34 percent are locally developed agricultural springs.

Intricate stonework (masonry) is often found at major agricultural springs and along portions of irrigation canals susceptible to erosion. The smaller springs supplying domestic needs have evolved a different technology: rock carving. Therefore, for the purpose of this paper I will focus only on the carvings associated with indigenously developed domestic springs (carvings of cisterns that supply water exclusively for drinking, cooking, bathing, and laundry).

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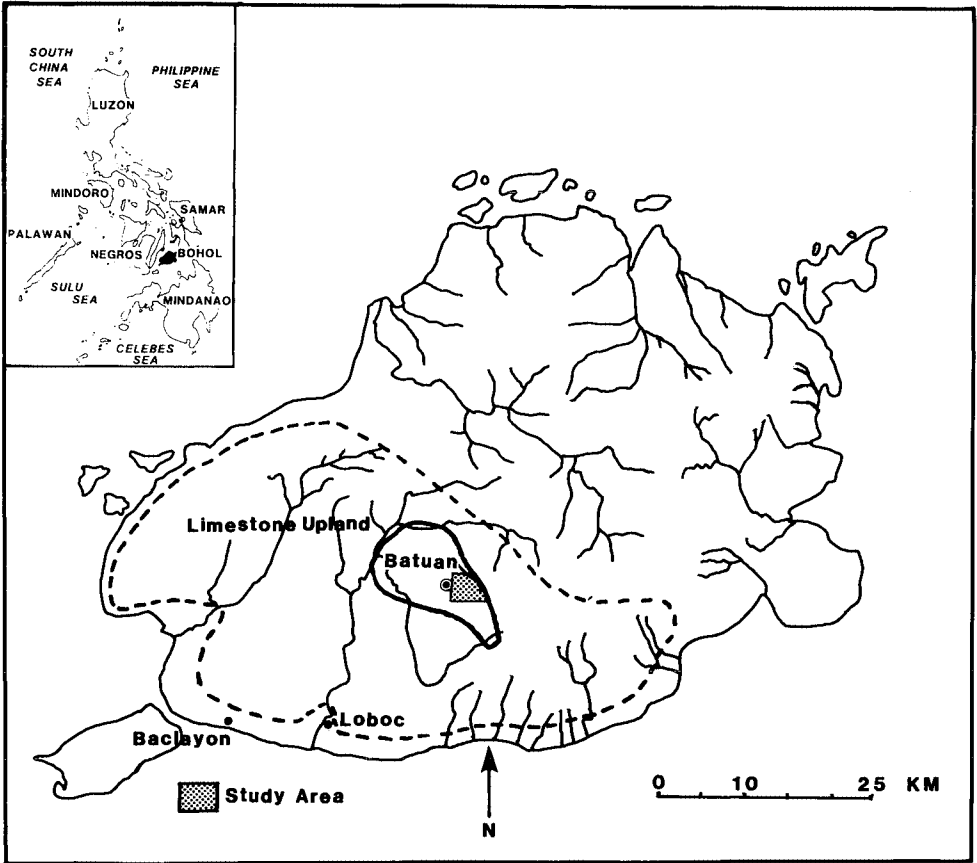


Fig. 1. Location of study site at Batuan on Bohol Island (Bohol Province). Dotted line borders limestone upland. Insert shows location of Bohol Island within the Philippine archipelago.

Manipulated springs do not occur in a single geologic context, but the larger irrigation springs are generally located in the valley areas and the domestic springs are situated at the base of hillslopes. This pattern fits logically with historical settlement patterns of the region, which find house sites dispersed and typically on the lower levels of the hills rather than in the cultivated valley areas.

The three examples of artistically elaborated springs discussed here are associated with one east-west trending *mogote* (limestone residual) located in the *barangay* of Poblacion Norte, Batuan, Bohol (Fig. 2, nos. 1, 2, 3). This *mogote*, unlike many others in the region, remains relatively well forested, with at least one possible pre-Spanish burial grotto on the southern flank.

The first example, located on the north flank of the *mogote*, is presumably the oldest carving given the extensive wear of the surrounding limestone (no. 1 on Fig. 2). It is located 1.0 m above the point where the hillslope meets the valley floor (Pl. 1b). Seepage at the soil/limestone interface spills into an excavated circular cistern 20 cm deep and 30 cm in diameter. A limestone slab, an unusual shape for limestone rocks of the area, has been placed 20 cm above the water's surface and is supported

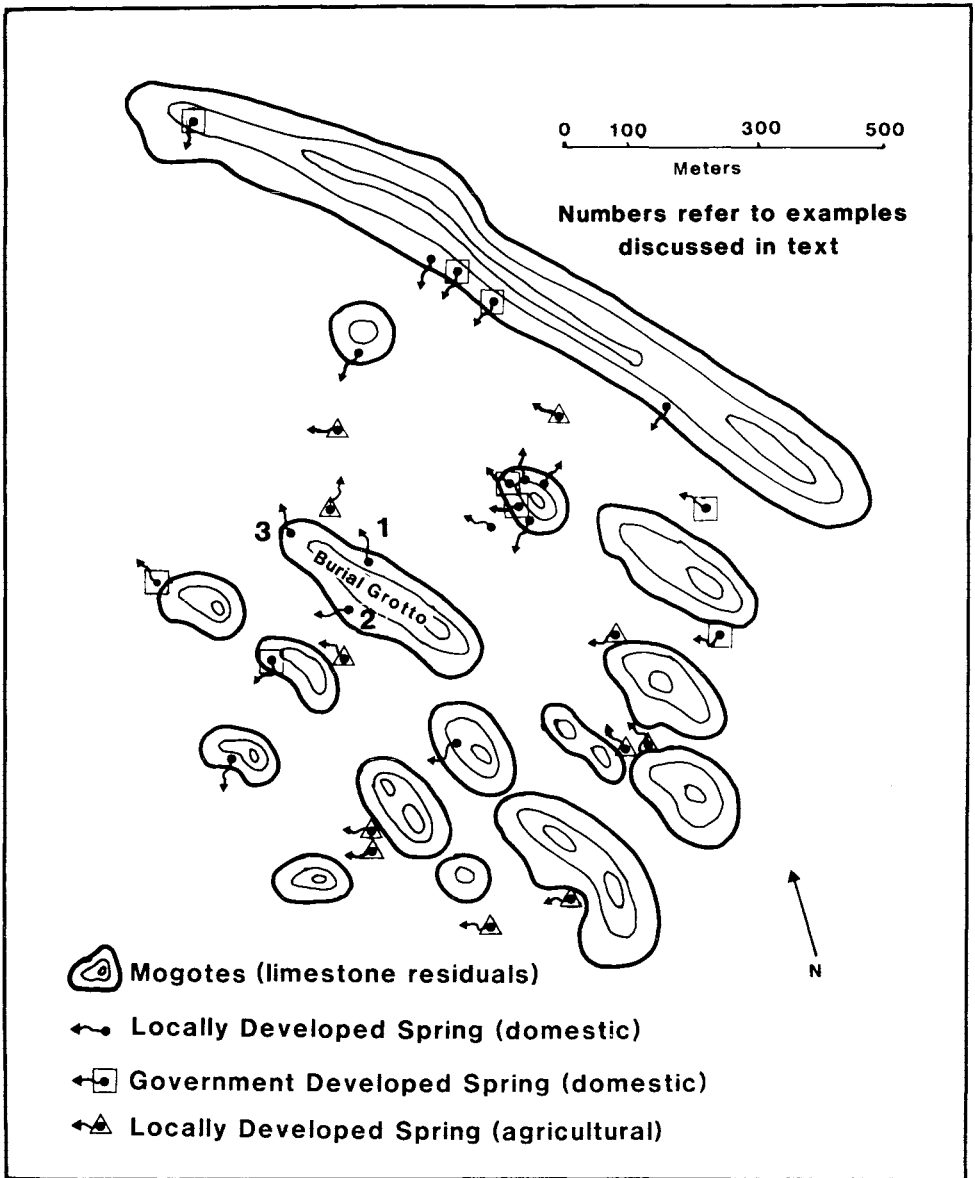


Fig. 2. Survey area depicting numbers of springs and type of development, Poblacion Norte, Batuan, Bohol.

by several stones. The flat stone covers about one-half of the reservoir. The cover, because of its unusual shape and size, appears to have been quarried and carved for this specific purpose. Draining the cistern are two channels that are carved into the soft limestone (locally termed *anapog*). One channel passes beneath the cover's supporting rocks and passes directly to the valley. The more prominent channel draining the cistern forms an intricate design. Water flow is evenly distributed through all



Pl. I. *a.* Landscape of the interior upland of Bohol, with *mogotes* dispersed randomly with intervening valleys that are under intensive double cropping of irrigated and rainfed rice. *b.* Situation of spring no. 1 on the north hillslope/valley interface, Poblacion Norte, Batuan.



Pl. II. *a.* Artistic carving associated with spring no. 1, Poblacion Norte, Batuan. *b.* Talus block and second cistern associated with spring no. 2, located on the southern hillslope/valley interface, Poblacion Norte, Batuan.



Pl. III. Primary carving associated with spring no. 2, Poblacion Norte, Batuan.

the channels of this more intricate design before reaching a second, smaller, shallow (3 cm) carving (Pl. IIa). The water exits this smaller carving via a wider and shorter channel that spills out into the valley.

On the southern flank of the *mogote* is a pair of abandoned excavated cisterns (no. 2 on Fig. 2). They are directly below the burial grotto at an elevation similar to the previous example. This system involves two related cisterns of almost equal size connected by a channel 100 cm long, 3 cm wide, and 2 cm deep (Pl. IIb) that passes beneath a 2.0 m³ block of limestone talus (Pl. IIb). The first cistern is located adjacent to a small (3 liter) lateral excavation that debouched water at a rate of 2 liters per minute (Pl. III). The cistern is 40 cm deep and about 20 cm in diameter, but is not as circular as the previous example. The second cistern is rectangular in shape and is only 10 cm in depth (Pl. IIb). The water drains from the second reservoir via a somewhat larger channel that issues in an irrigation canal.

The third and final example is located on the western flank of the *mogote* (no. 3



Pl. IV. Prominent excavation and cistern arrangement associated with spring no. 3, located on the western hillslope/valley interface, Poblacion Norte, Batuan.

on Fig. 2). Again, a small seepage has been located, and in this case several cubic meters of overburden has been removed (it is unclear whether overburden was removed in the context of the previous examples, but it is presumed that it was). This has exposed an area of limestone bedrock large enough to allow the desired cistern arrangement (Pl. IV). The first cistern is the same size as previous examples and is used as a source of drinking and cooking water. The second, larger cistern is used for bathing, and the final cistern is used for laundry. The cisterns are connected by small channels of uniform width but of variable depth. The channel linking the drinking water to bathing water is shallow and is never or rarely plugged to restrict flow, yet the channels linking the second reservoir to the third and the third to the valley are deeply incised and are occasionally plugged to raise the water level or unplugged to drain the cisterns.

The number of reservoirs linked by excavated channels per water source in these

examples varies from one to three; if one neglects the small and seemingly ceremonial utility of the shallow reservoir in the first example. Springs nos. 1 and 2 are located more than 50 m from any contemporary residence. Spring no. 3 is a "private" facility utilized by a family living 10 m to the north (water in the region is never considered to be owned by *any* individual). The first and third examples are in regular use and appear to be maintained. By contrast, spring no. 2 is in poor condition, with the cisterns filled with decomposing leaves, sticks, insects, and aquatic life.

Both the antiquity and provenance of these carvings are problematic. The reasons for, or ritual meaning of, the decorative and utilitarian embellishment of the springs have not been preserved in oral tradition. The imprint of human usage and the degree of weathering in the vicinity of the cisterns suggest significant age. The third example, while perhaps more contemporary, may in fact be an example of upgrading of a preexisting cistern arrangement. When considered in the context of the development of the entire upland region, one may speculate that these features are of some, perhaps considerable, antiquity. Therefore, one must look at the development of the entire upland region.

Fox (1962) asserts that at the time of Spanish contact wet rice cultivation was wholly confined to Luzon Island. However, he also states that perennial springs were the focus of pre-Spanish communities, and Batuan certainly qualifies in that regard (Fox 1962:382). The same article laments the lack of a published ground-plan for any pre-Spanish settlement. Yet there is evidence to suggest more extensive pre-European rice cultivation in areas including Bohol, which may reveal a pre-Spanish settlement pattern.

Spanish chronicles from European contact suggest that Bohol was a substantial producer of rice. In 1565 a reconnaissance crew of conquistador Manuel de Lagazpi encountered and seized a *parao* within swimming distance of Bohol. In the vessel was enough rice to fill 12 casks (pipes) on their Spanish batel (Rodriguez 1965:61). The volume of one pipe is approximately 500 liters. These 12 pipes represent about 80 *cavans*, or 3500 kilos, of rice. Of note, the chronicle explicitly states that a sizable volume of rice remained in the *parao*'s hold after the Spanish pipes had been filled.

Permanent Spanish occupation of Bohol came with the arrival of Fathers Juan de Torres and Gabriel Sanchez in November 1596. They settled on the south coastal site of Baclayon. After gaining the people's confidence, Juan de Torres moved inland to the trading town of Loboc (Fig. 1). Torres, who came from the rice-growing region of Andalusia, made fast friends in Loboc discussing and trading notes on different methods of cultivation (Costa 1961:164).

As further evidence, a Jesuit annual letter of 1610 commended the Boholanos for their benevolence in time of famine, as villages took turns feeding the poor. During the week they hunted wild pig and deer and on Sunday brought the cooked meat and rice to go with it ("for rice is like bread here") and distributed it until everyone had enough (Costa 1961:313).

Evidence of abundant rice in the time of coastal famine suggests that a wet rice culture associated with the multitude of spring sources in the upland was probably developed in the pre-Spanish era. Unfortunately, scientific evidence to support this hypothesis has yet to be found.

The durability of rock carvings within the *anapog* limestone provides a unique

opportunity to trace the development and settlement pattern of the moist interior karst upland—assuming, of course, that the carvings can be dated. It is presumed that a more detailed examination will uncover additional examples and clues to their age and origin, since Batuan's easily deformed bedrock and general shallowness of soils (< 30 cm) is conducive to house post and burial excavations. It is important to note that these are all mappable aspects of human occupation associated with community development and expansion.

These artifacts, and most notably spring-associated rock-carved cisterns, are not immune from destruction. The approval of the Payumo Bill, now Republic of the Philippines Act 6716, mandates the improvement of springs in order to provide potable and adequate water supplies to all the citizens of the Philippines. Of course this includes Bohol. To date numerous springs in Batuan have been "upgraded" through construction of small concrete cisterns with spigots, resulting in untold archaeological losses. Rock carvings may be safe from looters, but they are not safe from the march of "progress."

REFERENCES

- COSTA, S. J.
1961 *The Jesuits in the Philippines 1581–1768*. Cambridge: Harvard University Press.
- DAVIS, S. G.
1963 Hong Kong. *AP* 7(1–2):19–21.
- DAVIS, S. G., SHIRLEE EDELSTEIN, AND MADELEINE H. TANG
1974 Rock carvings in Hong Kong and the New Territories. *AP* 17(1):1–4.
- FOX, ROBERT B.
1962 Ancient Filipino communities, in *Proceedings of the Symposium on the Impact of Man on Humid Tropics Vegetation*: 380–387 Canberra: Commonwealth Government Printers.
- RODRIGUEZ, E.
1965 Legazpi's voyage of discovery and conquest of the Philippines (1564–1565), in *The Colonization and Conquest of the Philippines by Spain*: 41–73. Manila: 7 Filipiniana Book Guild.